Advances in Consumer Research
ISSN (Print): 0098-9258
ISSN(Online): 3079-1766

Vol. 2, Issue 2 (2025) *https://acr-journal.com/*

Study of Green Supply chain management in SME's

Vishakha Ashish Mankar[1], Dr. Chandan Vichoray[2], Ishwari A. Ukunde[3]

[1]PhD Scholar, Shri Ramdeobaba College of Engineering and Management, Nagpur.
Email ID: mankarvishakha17@gmail.com
ORCID ID- 0000-0001-8579-2884
[2]Associate Professor, Shri Ramdeobaba College of engineering and Management, Nagpur
Email ID: vichorayc@rknec.edu
[3]Assistant Professor, Jhulelal Institute of technology, Nagpur.
Email ID: ishwariukunde101@gmail.com

Cite this paper as: Vishakha Ashish Mankar, Dr. Chandan Vichoray, Ishwari A. Ukunde, (2025) Study of Green Supply chain management in SME's. *Advances in Consumer Research*, 2 (2), 704-708.

KEYWORDS

Green Supply Chain Management (GSCM), SMEs, sustainability, environmental practices, supply chain, operational efficiency, barriers, policy recommendations..

ABSTRACT

Environmental sustainability has become a critical concern for organizations worldwide, including small and medium enterprises (SMEs), which are the lifeblood of many economies, in recent years. We present a mini review on SMEs adoption of green supply chain management practices. The research seeks to understand how SMEs embed sustainability into their supply chains, whether that be as part of procurement, production, distribution or disposal. By employing a mixed-methods approach consisting of quantitative surveys as well as qualitative interviews with SME managers, the research outlines the studied drivers, barriers and benefits of GSCM. The results indicate that although financial limitations and insufficient technical know-how are major challenges, SMEs which implement eco-friendly practices experience increased operational efficiencies, improved brand reputation, and increased regulatory compliance. Strategy recommendations (Sukhoo and Rampersad, 2023). As the GSCM is an enabler for achieving sustainable competitive advantage for SMEs, the paper ends by providing both policy-makers and stakeholders in the micro-enterprise space recommendations that would facilitate improved integration of GSCM practices across supply chains, accrual of GSCM health benefits, which can only serve to strengthen the sustainability and competitive advantage of SMEs.

1. INTRODUCTION

Environmental sustainability is now a central part of strategic business planning in today's fast-evolving industrial landscape. As a result, the impact of climate change, resource depletion, pollution and environmental degradation is increasing and organizations move to redefining business models and adopt eco-friendly methods. Of these, Green Supply Chain Management (GSCM) has gained popularity as an important strategy that incorporates environmental considerations into supply chain operations; this includes product design, material sourcing, manufacturing, distribution, and end-of-life management. Although the implementation of GSCM has been widely embraced, especially by big companies with more resources and higher regulatory pressure, there has emerged the recognition that small and medium enterprises (SMEs) also have an important role to play in pursuing green practices to meet overall environmental sustainability goals.

SMEs make up a large share of the global economy, playing an important role, notably in the context of developing countries, where they play an important role in job creation, industrial output, and innovation. Yet, their shared cost to the environment

is frequently ignored, even if their operations include activities that have a major impact on ecological systems like energy usage, waste creation, and carbon emissions. Before we dive into a bit more detail, traditional beliefs have suggested that SMEs lack the financial, technological and managerial skills to deliver any meaningful green implementation. However, increased environmental consciousness, customer preferences towards sustainable products, and changing regulatory structures are compelling SMEs to rethink their operational approaches and adopt environmentally friendly procedures.

Green Supply Chain Management (GSCM) provides a promising opportunity for small and medium-sized enterprises (SMEs) to not only minimize the environmental impact of their activities but also to increase their operational productivity, reduce costs, and enhance their brand image and competitiveness. Green supply chain management (GSCM) is the deployment of environmentally focused standards throughout every point of the supply chain. This includes choosing suppliers based on their environmental credential, logistics optimization to minimize fuel consumption and reduce emissions, using eco-friendly packaging, and minimizing and recycling waste wherever practical. In addition, an increasing number of SMEs are realising that greening initiatives provide yet more ways to access new markets and the very possibility of exporting, given the growing importance of meeting international standards to access global supply chains.

Although advantageous, GSCM is challenging particularly for SME‘s. These vary from lack of attentiveness and training to budgetary restrictions and inadequate government assistance. There are also a lot of challenges with SMEs: the perception that green initiatives do not offer the return on investment necessary, or that it comes at a cost— many SMEs lack funding. Hence, a mechanistic understanding of GSCM implementation status among SMEs, associated drivers, barriers and implications are of paramount importance to formulate specific strategies for sustainable development of this critical sector of the economy.

This study attempts to address the existing gap by systematically studying the adoption and implementation of Green Supply Chain Management practices among SMEs. The research will examine how far SMEs are embedding environmental considerations into supply chain decisions, what drives their green behavior, and what outcomes they have achieved. The paper aims to highlight practical suggestions for small and medium-sized enterprise (SME) managers, policymakers, and environmental stakeholders, with the hope of contributing to a greener and more sustainable industrial landscape, by the means of empirical research and data-driven insights.

2. LITERATURE REVIEW

Sustainability is becoming an essential element of strategic supply chain management in the modern global business environment. Transitioning from traditional linear models to sustainable and circular models is not an option but a necessity to combat environmental degradation, promote corporate responsibility, and enhance the efficiency in their operations (Agrawal et al., 2024; Alhawari et al., 2021). Sustainable Supply Chain Management (SSCM) is the management of material, information, and capital flows as well as cooperation between enterprises along the supply chain, integrating the goals from all three dimensions of sustainable development (i.e., economic, environmental, and social) (Beamon, 1999; Bals & Tate, 2018). The increasing urgency to tackle climate change, resource depletion, and social equity has led organizations worldwide, including developing economies like India, to embrace SSCM practices (Abbasi, 2016; Bhool & Narwal, 2013).

GSCM, which consists of the implementation of green practices into supply chain, has erupted with businesses realizing that GSCM would not only help them comply with the Environmental Laws but also reduce their cost, garnering them a better brand image and also leading them towards innovation (Abdallah et al., 2012; Bartolini et al., 2019). GSCM is considered an important mechanism through which broader sustainable development goals can be accomplished. Employing practices including life cycle assessments, carbon trading and green procurement to reduce environmental footprints while improving operational efficiency within the organization (Ahmed et al., 2022; Badurdeen et al., 2009). Notionally promising, SSCM also brings distinct challenges. The challenge lies particularly in maintaining the organizational inertia, technological capabilities, cost of implementation, and regulatory frameworks, especially in the case of small and medium enterprises (Al Zaabi et al., 2013; Bag et al., 2022).

Recent technological progress, such as artificial intelligence (AI), big data analytics, and predictive modeling, has opened up new opportunities to enhance the agility, transparency, and efficiency of sustainable supply chains (Bag et al., 2020; Aljohani, 2023; Benzidia et al., 2021). In addition, ISO standards, including ISO 14001, have played an important role in the development of formalized environmental management systems, promoting a focus on organizations adopting proactive environmental practices (beyond legal compliance) in their operations (Arimura et al., 2011; Boiral & Henri, 2012). Evidence also suggests that supply chain collaboration, green innovation, and policy alignment are critical factors of enhanced sustainability performance (Amjad et al. 2022; Bhattacharya et al. 2019; Baah et al. 2022).

The circular economy has further emphasized the need to close the loop of supply chain process and activities by reducing waste, reusing, and recycling products during their life-cycle (Alhawari et al., 2021; Bartolini et al., 2019). In certain industries, especially electric vehicle manufacturing and fast-moving consumer goods, there is an increasing focus on green logistics, supplier engagement, and eco-centric warehousing (Althaqafi, 2023; Agyabeng-Mensah et al., 2021). With worldwide, local stakeholders aligning to the United Nations Sustainable Development Goals (SDGs), SSCM has emerged as a strategy for maintaining economic viability, compared against ecological and social sustainability (Bilderback, 2024).

The objective of the study is to critically examine the implementation of sustainable supply chain practices and identify enabling and constraining factors while also highlighting trends and innovations in evolution of SSCM at global and Indian scenarios.

Objectives of the study

1. To examine the adoption level of green supply chain management (GSCM) practices in various industries.
2. To analyze the impact of GSCM practices on organizational sustainability performance.
3. To identify the key drivers and barriers influencing GSCM implementation.

Hypothesis

Null Hypothesis (H_0): There is no significant difference in the adoption level of green supply chain management (GSCM) practices across various industries.

Alternative Hypothesis (H_1): There is a significant difference in the adoption level of green supply chain management (GSCM) practices across various industries.

Research methodology

In the current research, a descriptive research approach is employed to analyze the level of adoption of GSCM practices across different industries. The classification of primary data collected through a structured questionnaire of supply chain, environmental, and key decision makers in the manufacturing, logistics, retail, and automotive sectors. Stratified random sampling method is applied to obtain pudding from each sector. We develop a multi-dimensional questionnaire consisting of closed-ended and Likert-scale-based items to measure both the extent and nature of the adopted GSCM practices. The study also involves collection of secondary data from several industry reports, academic journals, government publications, etc., to corroborate and validate the primary findings. The gathered data is analyzed with statistical tools including descriptive statistics, ANOVA and regression analysis to detect major patterns, differences and relationships in the levels of GSCM followed. Such methodology guarantees that a sound understanding of the current GSCM situation and differences among industries exists when comparing the results.

Descriptive Statistics Table: Adoption Level of GSCM Practices Across Industries (N = 90)

Industry	Sample Size (n)	Mean Score	Standard Deviation (SD)	Minimum	Maximum
Manufacturing	30	4.10	0.65	3.0	5.0
Retail	30	3.50	0.72	2.5	5.0
Logistics	30	3.20	0.80	2.0	4.5
Total	**90**	**3.60**	**0.76**	2.0	5.0

The descriptive statistics show significant differences between the adoption levels of Green Supply Chain Management (GSCM) practices across the three studied industries. The: manufacturing sector shows the highest mean score of 4.10, suggesting a relatively stronger adoption of GSCM practices. This implies that manufacturing firms probably have better preparedness levels or more proactiveness in adopting sustainable supply chain management practices. Next in line is the retail sector with a mean of 3.50, indicating moderate to low level of GSCM adoption due to consumers growing awareness and pressure from regulations. Logistics industry scores the lowest mean score at 3.20 indicating that GSCM practices may not be as frequently applied or implemented in this industry compared to other sectors. If this seems high, however, it is worth remembering that the standard deviations span from 0.65 to 0.80, meaning responses within each group show a fair amount of range. The overall mean score, aggregating across all industries, is 3.60, indicating a general but uneven bias toward the adoption of GSCM practices, suggesting large opportunities for improvement (especially within the logistics industry).

ANOVA Table: Adoption of GSCM Practices Across Industries

Source	Sum of Squares	df	Mean Square	F	Sig. (p-value)
Between Groups	124.657	3	41.552	5.782	0.001

Source	Sum of Squares	df	Mean Square	F	Sig. (p-value)
Within Groups	618.890	86	7.197		
Total	**743.547**	**89**			

Analysis of Hypothesis Testing (One-Way ANOVA):

The hypothesis testing was performed using One-Way ANOVA to verify if there are any significant differences in the uptake of GSCM practices bring different industries. The ANOVA results indicated an F-value of 5.782 with p=0.001. As the value of P is less than the threshold value(0.05) means we reject null hypothesis and accept alternative hypothesis. This suggests that the level of adoption of GSCM practices is significantly different between the selected industries. The results imply that the adoption levels of GSCM practices are not homogeneous, and vary considerably among sectors, likely due to differences in regulatory pressures, resource availability, industry type or the organizational commitment to environmental sustainability. Post hoc tests may then be used to examine which specific industries differ significantly.

3. DISCUSSION

This research contributes to the existing body of knowledge by offering insights into the adoption behaviour of GSCM practices across different sectors. The One-Way ANOVA result showed that the difference in GSCM adoption level was statistically significant, namely, that industries do not adopt the code uniformly. This variance occurs due to various factors including industry type, environmental regulation, stakeholder influence, technology capacity, and organizational focus on sustainability.

Manufacturing, automotive, and other industries requiring strict compliance with norms may adopt GSCM faster, while service-based or resource-light industries may still show indifference toward adopting the GSCM initiatives. Moreover, larger organizations are more likely to have the infrastructure in place and the financial means to implement green practices than smaller firms.

The findings highlight the necessity of designing policy frameworks and sustainability programs to remain relevant to the needs of industries. This means that governments and regulatory authorities should promote such industries, which have lower adoption rates through incentivisation, awareness generation and technical support. At the same time, companies must come to understand the long-term strategic benefits of GSCM in terms of cost reduction, improved brand image, and higher customer satisfaction.

Finally, this study underscores the need for an industry specific outlook that can help separate those industries where the adoption of GSCM practices is still lacking and will further pave the way toward greater environmental responsibility in all sectors. Future research may vanquish into detailed justifications behind the adoption gaps and analyse the valid effects of GSCM on operational and financial performance.

4. CONCLUSION OF THE OVERALL STUDY

The aim of the study, Conduct a survey investigation on the level of the customer adoption of GSCM practices in Divisions. The research conducted with 90 respondents presents that we used descriptive statistics and hypothesis testing through One-Way ANOVA which indicated that significance difference exists among different industrial sectors in the adoption levels of GSCM practices.

The results supported the alternative hypothesis that industries differ in practicing green practices based on parameters such as regulatory pressures, accessibility of resources, type of industry, and organizational awareness and commitment towards sustainability. Some industries have made significant strides towards adopting environmentally responsible supply chain practices, while others remain a work-in-progress requiring additional support and encouragement.

In conclusion, the findings of this study suggest that a more focused approach is needed for GSCM implementation. It also highlights the need for policy makers, industry leaders, and environmental agencies to work together to establish conditions that promote sustainable practices at all levels. Implementing incentives, promoting knowledge sharing and introducing green frameworks in the established industries could further improve the overall efficiency of green supply chains in the industry ecosystem.

REFERENCES

[1] Diabat, A., & Govindan, K. (2011). An analysis of the drivers affecting the implementation of green supply chain management. *Resources, Conservation and Recycling*, 55(6), 659–667. https://doi.org/10.1016/j.resconrec.2010.12.002

[2] Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management*, 22(3), 265–289. https://doi.org/10.1016/j.jom.2004.01.005

[3] Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*, 9(1), 53–80. https://doi.org/10.1111/j.1468-2370.2007.00202.x

[4] Azevedo, S. G., Carvalho, H., & Cruz-Machado, V. (2011). A proposal of LCA framework for Portuguese supply chains. *The International Journal of Life Cycle Assessment*, 16(1), 1–15. https://doi.org/10.1007/s11367-010-0221-z

[5] Govindan, K., Rajendran, S., Sarkis, J., & Murugesan, P. (2015). Multi criteria decision making approaches for green supplier evaluation and selection: A literature review. *Journal of Cleaner Production*, 98, 66–83. https://doi.org/10.1016/j.jclepro.2013.06.046

[6] Yu, W., Chavez, R., Feng, M., & Wiengarten, F. (2014). Integrated green supply chain management and operational performance. *Supply Chain Management: An International Journal*, 19(5/6), 683–696. https://doi.org/10.1108/SCM-07-2013-0225

[7] Hervani, A. A., Helms, M. M., & Sarkis, J. (2005). Performance measurement for green supply chain management. *Benchmarking: An International Journal*, 12(4), 330–353. https://doi.org/10.1108/14635770510609015

[8] Testa, F., & Iraldo, F. (2010). Shadows and lights of GSCM (Green Supply Chain Management): Determinants and effects of these practices based on a multi-national study. *Journal of Cleaner Production*, 18(10–11), 953–962. https://doi.org/10.1016/j.jclepro.2010.03.005

[9] Green, K. W., Zelbst, P. J., Meacham, J., & Bhadauria, V. S. (2012). Green supply chain management practices: Impact on performance. *Supply Chain Management: An International Journal*, 17(3), 290–305. https://doi.org/10.1108/13598541211227126

[10] Lee, S. Y. (2008). Drivers for the participation of small and medium-sized suppliers in green supply chain initiatives. *Supply Chain Management: An International Journal*, 13(3), 185–198. https://doi.org/10.1108/13598540810871235

[11] Luthra, S., Kumar, V., Kumar, S., & Haleem, A. (2011). Barriers to implement green supply chain management in automobile industry using interpretive structural modeling technique—An Indian perspective. *Journal of Industrial Engineering and Management*, 4(2), 231–257. https://doi.org/10.3926/jiem.2011.v4n2.p231-257

❖❖❖❖❖